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U.S. Department of Energy
Idaho Operations Office

Remedial Design/Remedial Action Work Plan for Group 7, Tank Farm Interim Action

INEEL
Idaho National Engineering and Environmental Laboratory
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DOEAD-10772
Revision 1

Remedial Design/Remedial Action Work Plan for Group 1, Tank Farm Interim Action

September 2003

Prepared for the
U.S. Department of Energy
Idaho Operations Office

ABSTRACT

This Remedial Design/Remedial Action Work Plan provides the framework for defining the remedial design requirements, preparing the design documentation, and defining and implementing the construction and operations phases of Operable Unit 3-13, Tank Farm Interim Action, which is to be performed at the Idaho Nuclear Technology and Engineering Center at the Idaho National Engineering and Environmental Laboratory. This plan details the design developed to support the interim action activities, selected in the Final Record of Decision for Operable Unit 3-13, as well as the management approach to conducting the interim action, the work elements for the interim action, and the associated schedule and documentation as modified by the Agreement to Resolve Dispute which settled the Notice of Violation, which was issued December 2002.

FOREWORD

This document is Revision 1 of the Remedial Design/Remedial Action (RD/RA) Work Plan for Group 1, Tank Farm Interim Action (TFIA). The original RD/RA Work Plan was published in September 2000 and initiated by the *Remedial Design/Remedial Action Scope of Work for Waste Area Group 3, Operable Unit 3-13* (DOE-ID 2000a), which established the framework and strategy for managing the remedial design process and the steps to be taken for an interim remedial action to meet the remediation goals of the Operable Unit OU 3-13, Record of Decision (ROD) for Group 1 TFIA (DOE-ID 1999). A final remedial action for Group 1 tank farm soils will be established in the OU 3-14 ROD. The intent of the remediation goals of the OU 3-13 ROD was met in the first RD/RA Work Plan revision. The OU 3-13 ROD requires installation and maintenance of institutional controls to prevent exposure to the tank farm soil and engineering controls to reduce water infiltrating the tank farm soil. The engineering controls to reduce surface water infiltration included installation of a temporary cover over the tank farm area to divert precipitation, installation or improvement of diversion channels, and installation of a lined evaporation pond. In accordance with the RD/RA Scope of Work and the OU 3-13 ROD, the RD/RA activities identified in the Work Plan were commenced in Fiscal Year 2001. During the implementation of the Work Plan, the project faced funding limitations and interferences with other tank farm projects. The Department of Energy (DOE) submitted a letter to the Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality (IDEQ), dated August 31,2001, formally requesting an extension on the milestone for submittal of the Draft Remedial Action Report. The letter also stated that a portion of the TFIA activities would not be completed as planned. The request was turned down by IDEQ with concurrence of EPA.

DOE submitted an Interim Remedial Action Report on July 26, 2002, before the July 29, 2002, enforceable milestone. The Interim Remedial Action Report detailed the remedial actions carried out in Fiscal Year 2001 and also described work that was not completed. IDEQ and EPA took notice of the uncompleted work. EPA served DOE a Notice of Violation on December 4, 2002, for not demonstrating compliance with the requirements of the RD/RA Work Plan, and, therefore, the FFA/CO (DOE-ID 1991). EPA, IDEQ, and DOE settled the Notice of Violation in an agreement effective February 21,2003, (Bowhan 2003) that requires the DOE to continue pursuing accelerated tank cleaning and closure and completing the OU 3-13, Group 1, TFIA as amended by the Notice of Violation. This revised RD/RA Work Plan details the Scope of Work, cost estimate, and construction schedule to complete the OU 3-13, Group 1, TFIA, as amended.

CONTENTS

FIGURES

TABLES

ACRONYMS

ARAR	applicable or relevant and appropriate requirement
BBWI	Bechtel BWXT Idaho, LLC
CN	curve number
DOE	Department of Energy
ECA	Environmentally Controlled Area
EDF	Engineering Design File
EPA	Environmental Protection Agency
FFA/CO	Federal Facilities Agreement and Consent Order
HASP	Health and Safety Plan
HDPE	high-density polyethylene
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IPMP	Implementing Project Management Plan
MCP	management control procedure
NE-ID	Department of Energy Idaho Operations Office
NOV	Notice of Violation
O&M	operation and maintenance
OU	operable unit
QA/QC	quality assurance/quality control
RCT	radiological control technician
RD/RA	remedial design/remedial action
RFP	Request for Proposal
RI/FS	remedial investigatiodfeasibility study
ROD	Record of Decision

SCS	Soil Conservation Service
SOW	Scope of Work
SRPA	Snake River Plain Aquifer
TBC	to be considered
TFIA	Tank Farm Interim Action
WAG	waste area group
WMP	Waste Management Plan
WP	Work Plan

Remedial Design/Remedial Action Work Plan for Group 1, Tank Farm Interim Action

1. INTRODUCTION

In accordance with the Idaho National Engineering and Environmental Laboratory (INEEL) Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991), the Department of Energy, Idaho Operations Office (NE-ID) submits the following revision to the Remedial Design/Remedial Action (RD/RA) Work Plan (WP) for Group 1, Tank Farm Interim Action (TFIA) within Operable Unit (OU) 3-13, in Waste Area Group (WAG) 3. The RD/RA activities identified in this WP, as part of the Comprehensive Environmental Response, Compensation and Liability Act process, will proceed in accordance with the signed OU 3-13 Record of Decision (ROD) (DOE-ID 1999) and the RD/RA Scope of Work (SOW) (DOE-ID 2000a) for WAG 3, OU 3-13 as modified by the Agreement to Resolve Dispute dated March 4, 2003 (Bowhan 2003). This RD/RA WP provides the framework for defining the remedial design requirements, preparing the design documentation, and defining and implementing the construction and operations phases of the TFIA.

1.1 Background

The Idaho Nuclear Technology and Engineering Center (INTEC), formerly known as the Idaho Chemical Processing Plant, is located in the south-central area of the INEEL in southeastern Idaho (see Figure 1-1). From 1952 to 1992, operations at INTEC primarily involved reprocessing spent nuclear fuel from defense projects, which entailed extracting reusable uranium from the spent fuels. Liquid waste generated from the reprocessing activities, which ceased in 1992, is stored in an underground tank farm at INTEC. Both soil and groundwater contamination has resulted from these previous operations. Under the FFA/CO, the Environmental Protection Agency (EPA), Idaho Department of Environmental Quality (IDEQ), and Department of Energy (DOE) (collectively referred to as the Agencies) are directing cleanup activities to reduce human health and environmental risks to acceptable levels. Per the FFA/CO, INTEC is designated as WAG 3. In order to facilitate remediation of INTEC, WAG 3 was hrther divided into OUs comprised of individual contaminant release sites.

Several phases of investigation have been performed at the OUs within WAG 3. A comprehensive remedial investigatiodfeasibility study (RI/FS) was conducted for OU 3-13 to determine the nature and extent of contamination and corresponding potential risks to human health and the environment under various exposure pathways and scenarios. Based on the RI/FS results, INTEC release sites were hrther segregated into seven groups based on contaminants of concern, accessibility, or geographic proximity to allow development and analysis of remedial action alternatives. The TFIA was designated as Group 1 within OU 3-13. The Group 1 soils are within the tank farm fence. The TFIA includes minimizing precipitation infiltration in the tank farm and within a 150-ft zone surrounding the tank farm (Figure 1-2). There are several buildings surrounding the tank farm; therefore, the perimeter boundary line is not drawn uniformly at the 150-ft mark. The area within the fence is approximately 200,000 ft^2 (4.6 acres) and the unpaved area within the 150-ft zone is approximately 160,000 ft^2 (3.7 acres). The principal threats posed by the Group 1 soils are from direct radiation exposure to workers or the public and from the potential leaching and transport of soil contaminants to the perched water or the Snake River Plain Aquifer (SRPA).

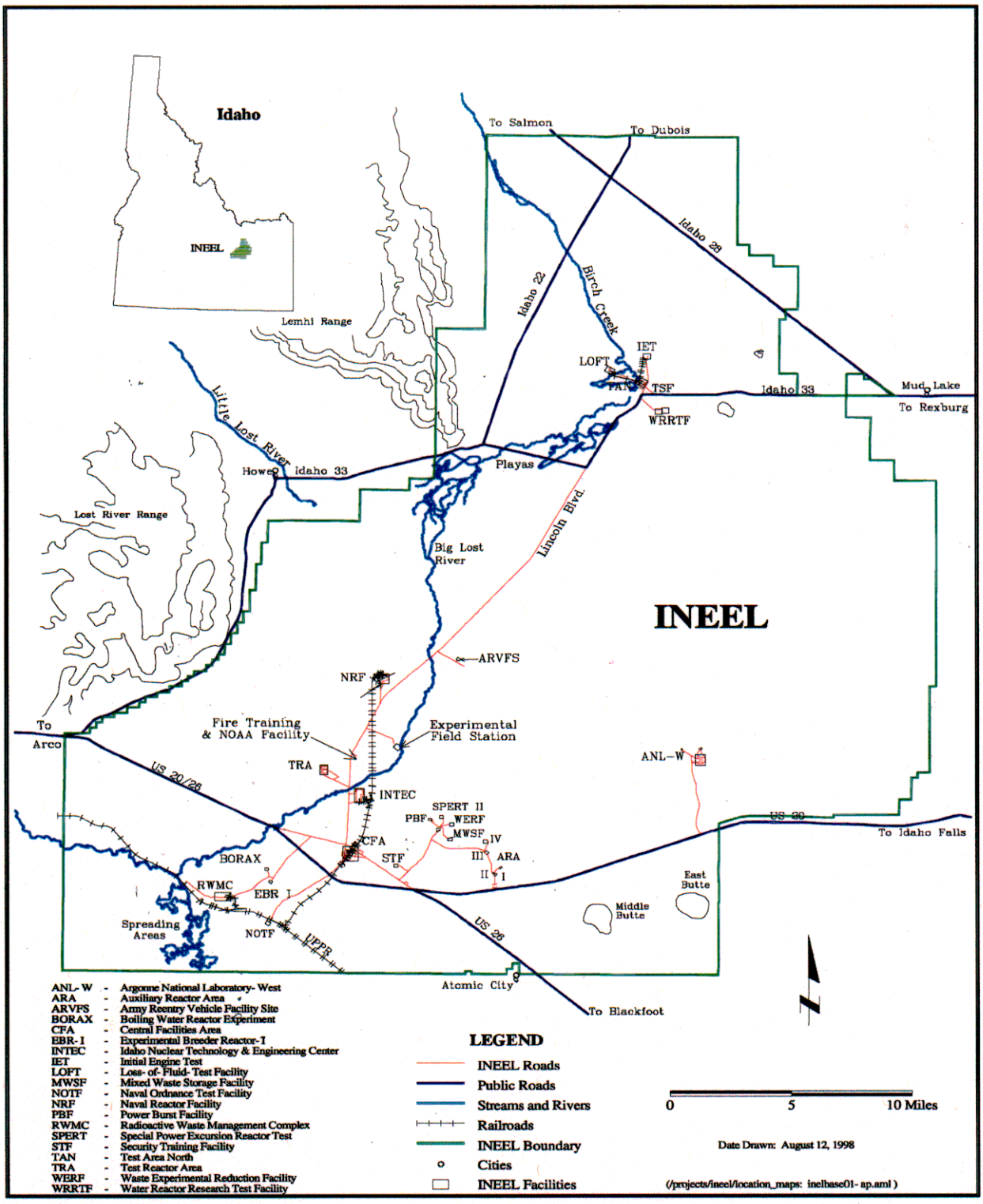

Figure 1-1. Location of INTEC within the INEEL.

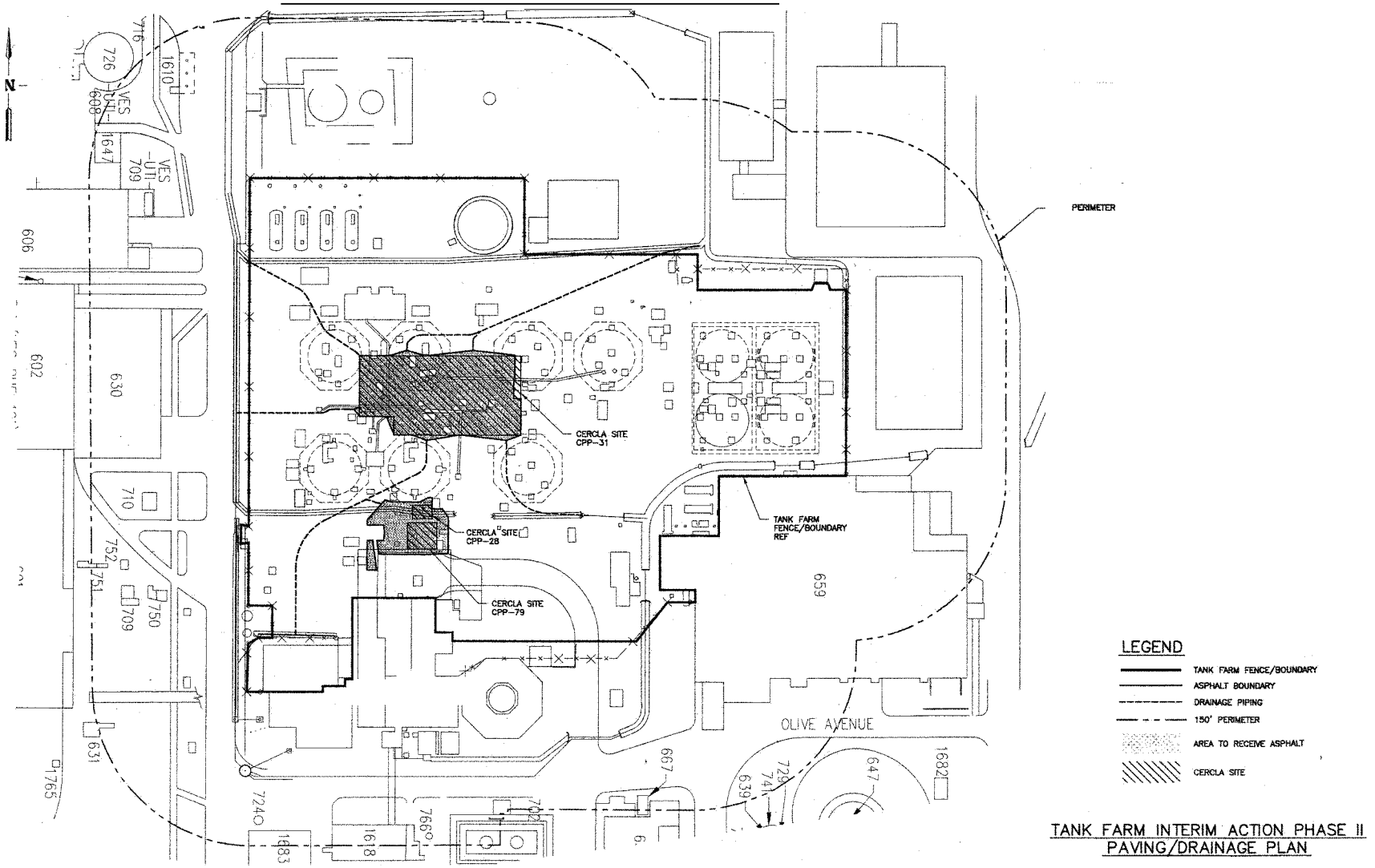

Figure 1-2. Location of TFIA activities.

1.2 Selected Remedy

A final remedy for the TFIA release sites has been deferred pending further characterization and coordination of any proposed remedial actions with the Idaho High Level Waste and Facilities Disposition Environmental Impact Statement (DOE 2002). The final remedy will be conducted under OU 3-14. The selected interim action is Institutional Controls with Surface Water Control. This interim action will provide protection until a final remedy is developed and implemented. The major elements of this action include the following: (1) restricting access to control exposure to workers and prevent exposure to the public from soils at the tank farm until implementation of the final remedy under OU 3-14; (2) accommodating a 1 in 25-year, 24-hour storm event, with surface water run-on diversion channels; (3) minimizing precipitation infiltration by grading and surface-sealing the tank farm soils located at selected areas CPP-28, CPP-31, and CPP-79 (Figure 1-3) sufficient to divert 80% of the average annual precipitation falling on these areas; and (4) improving drainage systems surrounding the tank farm to direct water away from the contaminated areas.

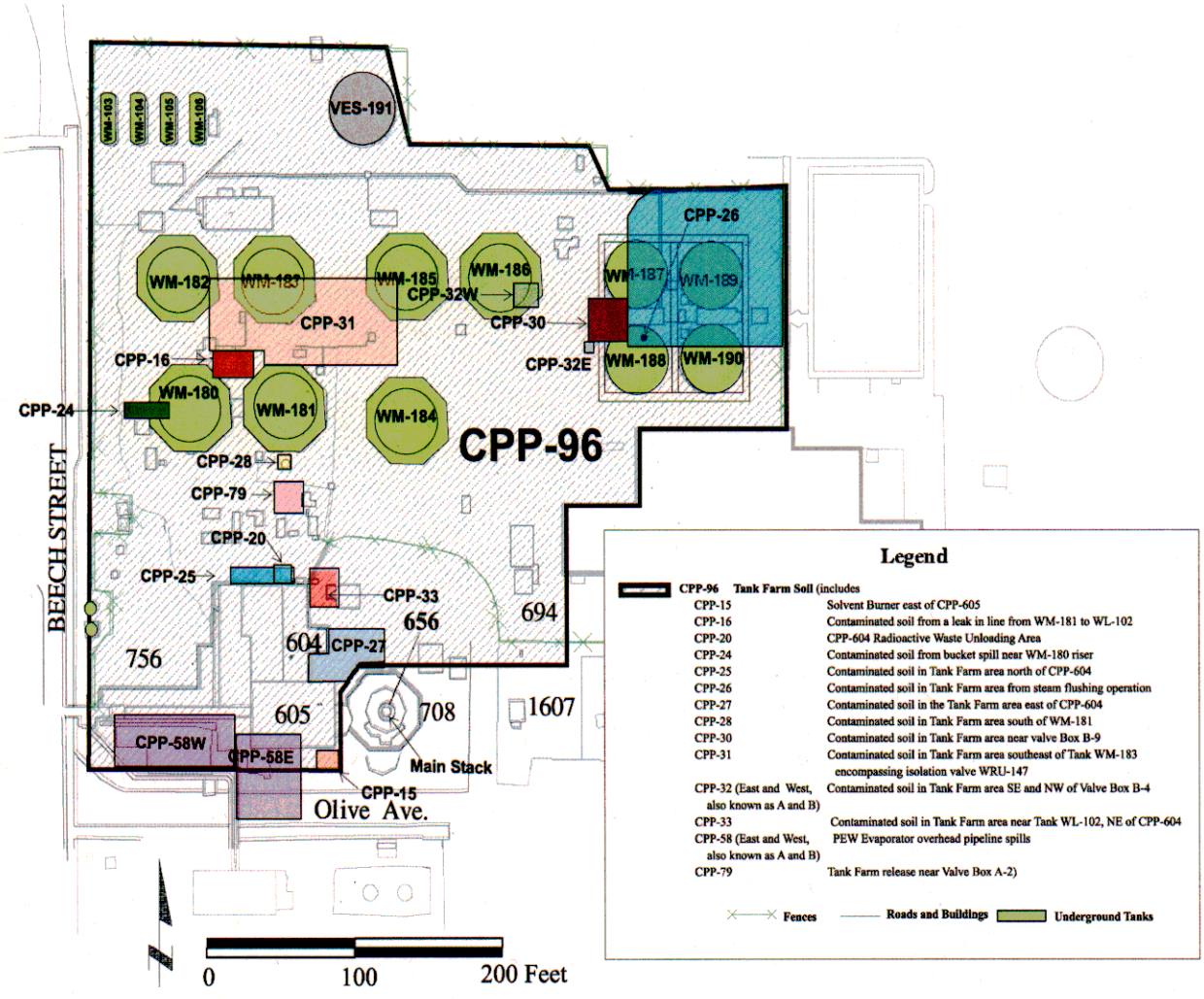

Figure 1-3. Select areas within the tank farm.

1.3 RD/RA Work Plan Organization

The RD/RA WP is a comprehensive document containing all design information with supporting documentation as well as the plan and supporting documentation for implementing the remedy in the field. Section 1 introduces the project and summarizes the background information for the project site. Section 2 outlines the basis for the design of the TFIA remedy, while Section 3 describes the actual design of the remedy (e.g., standards, codes, assumptions). Section 4 presents the WP, which describes how the remedy will be implemented in the field, both physically and from a management standpoint. The references used in the document are contained in Section 5.

The appendixes that provide the supporting documentation for the main body of the document are as follows:

- Appendix A is Engineering Design File (EDF)-1387, Drainage Ditch Capacity Verification at INTEC.
- Appendix B is EDF-1379, Olive Avenue Storm Water Lift Station at INTEC.
- Appendix C is INEEL/EXT-2000-00920, OU 3-13 Group 1, Tank Farm Interim Action, Evaporation Pond Sizing Design Engineering Design File.
- Appendix D is Engineering Design File, OU 3-13, Group 1, Tank Farm Interim Action, Soil Cover Justification (EDF-3824), which justifies the selection of the surface-sealing material to be used on the selected areas CPP-28, CPP-31, and CPP-79 within the tank farm fence.
- Appendixes E-1, Original Construction Specifications; E-2, Revised Phase I Construction Specifications; and E-3, Revised Phase II Construction Specifications, contain the construction specifications for the original (E-1) and revised designs (E-2 for Phase I and E-3 for Phase 11).
- Appendixes F-1, Original Design Drawings; F-2, Revised Phase I Design Drawings; and F-3, Revised Phase II Design Drawings, contain the design drawings for the original (F-1) and revised designs (F-2 for Phase I and F-3 for Phase 11).
- Appendix G, Quality Level Designation, contains the quality level designation for the TFIA remedy.
- Appendixes H-1, Original Construction Schedule, and H-2, Revised Construction Schedule for Phases I and II, contain the original (H-1) and revised detailed construction schedules (H-2 for Phase I and Phase 11).
- Appendix I, Storm Water Pollution Prevention Plan, contains the project storm water pollution prevention plan.
- Appendixes J-1, Detailed Cost Estimate; J-2, Revised Phase I Detailed Cost Estimate; and J-3, Revised Phase II Detailed Cost Estimate, contain the original (J-1) and revised detailed cost estimates (J-2 for Phase I and J-3 for Phase 11).
- Appendix K, DOE/ID-10771, Operation and Maintenance Plan for INTEC Operable Unit 3-13, Group 1, Tank Farm Interim Action, Phases I and II, contains the Operations and Management Plan.

- Appendix L, DOE/ID-10770, Waste Management Plan for INTEC Operable Unit 3-13, Group 1, Tank Farm Interim Action, Phases I and II, contains the Waste Management Plan.

- Appendix M, INEEL/EXT-2000-00194, Health and Safety Plan for Waste Area Group 3, Operable Unit 3-13, Group 1, Soils Tank Farm Interim Action, contains the Health and Safety Plan.

- Appendix N, Compilation of Changes to RD/RA WP and Supporting Documents, contains a list of changes to the RD/RA WP and supporting documents.

2. DESIGN BASIS

The selected remedy for the TFIA has been designed to restrict potential exposure to the public from the soils within the tank farm and to minimize potential leaching and transport of contaminants from select soils to the perched water or SRPA. These goals will be accomplished by covering areas CPP-28, CPP-31, and CPP-79, within the tank farm and the majority of the 150-ft control zone around the tank farm, with asphalt and upgrading the associated storm water drainage system. The locations of these activities and installations are shown in Figures 1-2 and 1-3.

The following subsections present the design criteria, DOE-related codes, standards and documents, engineering standards, environmental and safety applicable or relevant and appropriate requirements (ARARs), design assumptions, quality assurance program requirements, and unresolved data needs.

2.1 Design Criteria

The TFIA design is divided into the following three major components:

- **The Storm Water Drainage System Upgrade.** The storm water drainage system will be upgraded within and around the tank farm and out to the discharge point. This upgrade will include the following: constructing, grading, and lining new and existing ditches with concrete; installing a trench drain, lift station, and manholes; and replacing existing culverts with larger culverts to accommodate the expected increase in storm water flow. It will also include constructing concrete headwalls and endwalls, as necessary, throughout the lined drainage system.

- **Storm Water Evaporation Pond.** A double-lined storm water evaporation pond will be constructed outside of the INTEC fence to collect storm water run-off that currently discharges into the Environmentally Controlled Area (ECA) 37A (see Figure 1-2). The double liner consists of a geonet drainage layer placed between two 60-mil high-density polyethylene (HDPE) liners.

- **Surface Sealing.** Surfaces at areas CPP-28, CPP-31, and CPP-79, within the tank farm and the majority of the unpaved surfaces within the 150-ft control zone surrounding the tank farm, will be sealed with asphalt. These areas are shown in Figures 1-2 and 1-3. The perimeters of Sites CPP-28, CPP-31, and CPP-79 were established using the drawing numbered 094752, "INTEC Plot Plan of CERCLA Institutional Control Areas," current version May 2003. This scaled drawing contains a table of coordinates depicting each CERCLA remediation area at INTEC. This drawing, originally developed in 1990, has been updated as new information becomes available to better define the CERCLA sites. For example, the boundaries of CPP-79 reflect information from the 1993 Valve Box CPP-40 excavation and the subsequent valve box installation in 1995 that caused the boundary to be enlarged. This drawing was used as the starting point to define the extent of contamination of CERCLA Sites CPP-28, CPP-31, and CPP-79 and to assess whether the required infiltration barrier over the affected areas of the release sites would reduce the infiltration of precipitation through the principal soil contamination areas by significantly more than 80%, as identified in Section 3.2.2 of the Agency-approved "Agreement to Resolve Dispute" (see Appendix N). Other factors evaluated to identify the lateral extent of the release site included an assessment of information from previous investigations such the location of the initial release and data from the soil borings in the proximity to each release. The design also considered the surface drainage of each area and, as necessary, made adjustments to the barrier and drainage for surface impediments such as structures and utilities. For conservatism and to ensure the required reduction of infiltration to the sites, the surfacing of areas CPP-28 and CPP-79 was also expanded to overlap the area between the two sites

and to address potential uncertainty of the lateral extent of soil contamination. Based on these factors, the planned infiltration barrier is expected to reduce the infiltration of precipitation through the release Sites CPP-28, CPP-31, and CPP-79 by more than the required 80%.

Design criteria for each of the three components are provided in the following subsections.

2.1.1 Storm Water Drainage System

Two Engineering Design Files (EDFs) were developed for the design of the storm water drainage system, one to evaluate ditch and culvert capacities and one for the design of the lift station. These EDFs are included in Appendixes A and B. The storm water drainage system design criteria include

- Preventing surface water run-on from a 25-year 24-hour storm event
- Managing run-off to the existing storm water drainage management system
- Designing the components of the drainage system (i.e., ditches, trench drains, culverts, manholes, and the lift station) to accommodate the peak discharge from a 25-year storm event
- Using the rational method (standard method for designing storm water drainage systems) for sizing the components of the drainage system
- Using excavated material as fill material if suitable as described in the Construction Specifications, Section 02200 – Earthwork, provided in Appendix E-2
- Designing the lift station to allow for storage and connection to an existing storm drain line from the drywell shown on the drawings in Appendix F-2
- Sizing ditches and culverts near the outlet to accommodate drainage from the entire INTEC storm water drainage system
- Designing the drainage system to reduce precipitation infiltration by approximately 80% of the average annual precipitation at the tank farm areas CPP-28, CPP-31, and CPP-79.

2.1.2 Storm Water Evaporation Pond

An EDF was developed for the design of the storm water evaporation pond and is included in Appendix C. The design criteria include the following:

- Designing the pond to accommodate flow from the entire INTEC storm water drainage system
- Designing the pond to be protected from the 100-yr flood
- Designing the pond to manage and collect run-off water from the sealed tank farm areas CPP-28, CPP-31, CPP-79, and surrounding areas
- Constructing and using the pond as a best management practice to reduce infiltration in the tank farm area
- Designing the pond to accommodate the snowmelt run-off from the 25-year snowmelt event

- Designing the pond to maintain, on average, less than 6 ft of water
- Calculating the run-off volume using the Soil Conservation Service (SCS) (SCS 1986) method for small watersheds
- Providing a double liner system with leak detection
- Designing the side slopes of the pond to be 3:1
- Designing for the topsoil to be stockpiled separately and covered to prevent erosion
- Constructing the outside of the berm around the top of the pond with excess excavation material from the pond, covering with topsoil and revegetating to prevent erosion
- Ensuring the tops of the pond berms are above the 100-yr flood plain elevation.

2.1.3 Surface Sealing

Surfaces above areas CPP-28, CPP-31, and CPP-79, within the tank farm and the majority of the unpaved surfaces within the 150-ft control zone around the tank farm, will be sealed with asphalt.

One EDF was prepared for the selection of the surface sealing above areas CPP-28, CPP-31, and CPP-79 and the majority of the unpaved surfaces within the 150-ft control zone around the tank farm. This EDF is included as Appendix D. The design criteria for surface-sealing the selected tank farm areas and 150-ft control zone around the tank farm include the following:

- Designing the remedy to prevent exposure to personnel from soils at the areas CPP-28, CPP-31, and CPP-79 in the tank farm until the final remedy is implemented under OU 3-14.
- Designing the remedy to minimize the information by grading and surface-sealing the areas CPP-28, CPP-31, and CPP-79 in the tank farm and the unpaved surfaces within the 150-ft zone surrounding the tank farm to divert 80% of the average annual precipitation falling on these areas to the storm water collection system. The specific areas to be paved were revised based on the "Agreement to Resolve Dispute" reached between DOE, EPA, and IDEQ. The agreement between the Agencies and a June 9,2003, letter to the Agencies identifies the modification of the paved areas, including the areas to be paved outside of the tank farm fence. The agreement and letter are attached as Appendix N.
- Improving drainage to direct water away from contaminated areas
- Designing the cover system over the selected tank farm areas to ensure that the tank farm loading restrictions are not exceeded
- Maximizing run-off and minimizing surface water ponding on the selected tank farm areas
- Managing run-off as part of the existing storm water drainage management system
- Sealing areas CPP-28, CPP-31, and CPP-79 within the tank farm and the 150-ft control zone around the tank farm to direct run-off into the storm water collection system

- Minimizing infiltration and subsequent contaminant leaching due to external building drainage by grading and sealing unpaved surfaces along the base of the building exteriors

- Ensuring the asphalt coating is durable enough to not crack or degrade excessively under high traffic conditions defined as daily occurrences of foot traffic and light vehicle traffic crossing the coated areas three to four times daily

- Ensuring the asphalt coating will be free of ridges, waves, and sags and will have a high-friction surface to provide for safe walking and driving.

2.2 DOE Related Codes, Standards, and Documents

The following national standards, codes and regulations, subtier standards, and site-specific documents will be used as the basis for the TFIA:

- DOE/ID-10660, *Final Record of Decision for the Idaho Nuclear Technology and Engineering Center, OU 3-13 at the Idaho National Engineering and Environmental Laboratory*

- Letter from Cheryl A. Thompson, DOE-ID, to Scott W. Harrison, BBWI, Subject: Direction to BBWI to Implement the NOV Agreement for the Waste Area Group 3, Group 1 Tank Farm Interim Action and the Group 3 Other Surface Soils Remedial Design/Remedial Action Work Plan for Contract Number DE-AC07-99iD13727 (CF&AO-M&O-03-068), dated February 12,2003 (CCN 40026)

- DOE/ID-10721, *Remedial Design/Remedial Action Scope of Work for Waste Area Group 3, Operable Unit 3-13*

- DOE/ID-12589-152, *Remedial Design and Remedial Action Guidance for the Idaho National Engineering Laboratory*

- DOE-ID, *Architectural Engineering Standards,* Latest Edition

- DOE Order 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees"

- DOE Order 435.1, Change 1, "Radioactive Waste Management"

- DOE Order 5400.5, "Radiation Protection of the Public and the Environment"

- DOE Order 414.1A, "Quality Assurance"

- DOE Order 231.1A, "Environment, Safety, and Health Reporting"

- DOE Order 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees"

- DOE Order 470.1, "Safeguards and Security Program."

2.3 Engineering Standards

Appendixes E-1 and E-2 contain references to the latest engineering specifications. Engineering standards are provided with these specifications.

2.4 Environmental and Safety Requirements

Following is a list of potential ARARs for the TFIA identified in the ROD. ARARs identified for the TFIA were either action-specific or to be considered (TBC); no chemical-specific or location-specific ARARs were identified. The ARARs for the TFIA are listed in Table 2-1, as well as the specific action(s) that will be implemented to meet them.

Below are action-specific ARARs:

- IDAPA 16.01.05.008[a] (40 CFR 264.14), Security
- IDAPA 16.01.05.008 (40 CFR 264.15), General inspection requirements
- IDAPA 16.01.05.008 (40 CFR 264.16), Personnel training
- IDAPA 16.01.01.650 and 16.01.01.651, Rules for Control of Fugitive Dust and General Rules, respectively
- 40 CFR 122.26, Storm water discharges
- 40 CFR 61.92, Standard
- 40 CFR 61.93, Emission monitoring and test procedures
- IDAPA 16.01.01.585 and 16.01.01.586, Toxic Air Pollutants Non-Carcinogenic Increments and Toxic Air Pollutants Carcinogenic Increments, respectively
- IDAPA 16.01.05.008 [40 CFR 264.310(b)(5)], Closure and post-closure care
- IDAPA 16.01.05.008 (40 CFR 264.553), Temporary units
- IDAPA 16.01.05.008 (40 CFR 264.554), Staging piles.

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[a] Following submittal of the OU 3-13 ROD, the Idaho Department of Environmental Quality Rules were renumbered such that all IDAPA 16.xx.xx rules are now IDAPA 58.xx.xx. While the administrative rules have been renumbered, the rules regarding WAG 3 are effective as promulgated as of October 1999, the date of the ROD.

Table 2-1. Applicable or relevant and appropriate requirements for the TFIA.

Alternative/ARARs citation	Description	Applicable, or Relevant and Appropriate, or TBC	Comments
Group 1-TFIA: Alternative 3 – Institutional Controls with Surface Water Control			
Action-specijc			
IDAPA 16.01.05.008(40 CFR 264.14)	Security. The owner or operator must prevent unknowing entry and minimize the possibility of unauthorized entry onto the active portion of the facility.	Applicable	The project site is located at the INEEL which has restricted access. In addition, the INTEC facility has more stringent access controls and specific signs and barriers have been placed at the site to restrict unknowing or unauthorized access. The tank farm itself is within a fence and is posted for restricted access.
IDAPA 16.01.05.008(40 CFR 264.15)	General inspection requirements. The owner or operator must conduct inspections often enough to identify problems and correct them before they harm human health or the environment.	Applicable	Inspections will be performed and documented in accordance with INTEC management control procedures and the Operations and Maintenance Plan (Appendix K). A logbook will be maintained to demonstrate the periodic inspections have been conducted, and that corrective actions have been completed.
IDAPA 16.01.05.008(40 CFR 264.16)	Personnel training. Personnel must successfully complete training that teaches them how to perform their duties.	Applicable	Personnel performing work at the site are trained to the hazards present at the job site, as required by the project Health and Safety Plan (Appendx M). Prior to the initiation of any work, the training records for all participants will be reviewed to ensure compliance with the regulatory requirements for the specific task being performed. Copies of the training records will be maintained at the project site during interim action activities and are also kept in the individuals' training files.

Table 2-1. (continued)

Alternative/ARARs citation	Description	Applicable, or Relevant and Appropriate, or TBC	Comments
IDAPA 16.01.01.650, 16.01.01.651	Idaho fugitive dust emissions. All reasonable precautions shall be taken to prevent particulate matter from becoming airborne.	Applicable	Dust suppression measures will be implemented as necessary during the remedial action to minimize the generation of fugitive dust and restrict the potential spread of contamination. These measures may include water sprays, minimizing vehicle speeds, and work controls during period of high wind.
40 CFR 122.26	Storm water discharges during construction.	Applicable	During the interim action grading will be implemented to ensure that run-on or run-off will be directed into the appropriate collection area. Interim action activities will be performed in accordance with the project Storm water Pollution Prevention Plan (Appendix I).
40 CFR 61.92, 40 CFR 61.93	National Emission Standards for Hazardous Air Pollutants for radionuclides from DOE facilities, emission monitoring, and emission compliance	Applicable	Soil disturbances are currently planned to occur above the tank farm liner. If radioactive contamination is encountered, analytical data will be collected to quantify the amount of activity released. If exposure limits are exceeded, work will be stopped and the radiological control technician will be consulted to develop appropriate measures to work within the environment.
IDAPA 16.01.01.585, 16.01.01.586	Rules for control of air pollution in Idaho.	Applicable	Radiological emission levels and acceptable ambient air concentrations for carcinogens and nonarcinogens shall not be exceeded.
IDAPA 16.01.05.008 [40 CFR 264.310(b)(5)]	Run-on and run-off controls to protect final cover from erosion or otherwise damaging the final cover.	Applicable	The installation of asphalt and associated ditching and pond are designed to address run-on and run-off at INTEC.
IDAPA 16.01.05.008(40 CFR 264.553)	Temporary units containing hazardous remediation wastes generated during remedial activities, must be located within the property where the wastes to be managed originated.	Applicable	Any temporary units resulting from hazardous remediation wastes derived from construction activities will be managed according to the project specific Waste Management Plan (Appendx L), or as negotiated with the regional administrator.

Table 2-1. (continued)

Alternative/ARARs citation	Description	Applicable, or Relevant and Appropriate, or TBC	Comments
IDAPA 16.01.05.008(40 CFR 264.554)	Staging piles containing solid, nonflowing remediation waste to be used only during remedial operations for temporary storage at the facility, must be located within the property where the wastes to be managed originated.	Applicable	Any staging piles will be constructed to prevent infiltration and wind erosion by covering. The proposed staging piles are not anticipated to leave the tank farm area, and will be incorporated into the final grading prior to the installation of the polyurea liner.
TBCs			
DOE Order 435.1	Radioactive waste management performance objectives designed to protect worker and public health and safety, in addition to the environment.	TBC	In addition to the project Health and Safety Plan (Appendix M), a Job Safety Analysis and/or Radiological Work Permit(s) will be prepared and implemented for tasks where there is the potential for exposure to radioactive contamination/materials, to protect human health and the environment. Radiological Work Permits will only be used as determined by the radiological controls technician, based on applicable company policies and procedures. Radioactive waste generated during the project will be managed according to the project specific Waste Management Plan (Appendix L).
DOE Order 5400.5	DOE facilities shall be operated and activities conducted to protect the environment and ensure exposures to public will be ALARA.	TBC	In addition to the project Health and Safety Plan (Appendix M), a Job Safety Analysis and/or Radiological Work Permit(s) will be prepared and implemented for tasks where there is the potential for exposure to radioactive contamination/materials, to protect human health and the environment. Radiological Work Permits will only be used as determined by the radiological controls technician, based on applicable company policies and procedures. Radioactive waste generated during the project will be managed according to the project specific Waste Management Plan (Appendix L).

Below are TBC ARARs:

- DOE Order 435.1, Radioactive Waste Management
- DOE Order 5400.5, Radiation Protection of the Public and the Environment.

2.5 Management Control Procedures

Title I, II, and III design activities will be performed in compliance with the applicable management control procedures (MCPs). The MCPs for this project are those identifying requirements in the following areas:

- Engineering design
- Emergency preparedness and management
- Environmental management
- Fire protection
- Management systems
- Occupational safety and health
- Radiological protection
- Security
- Environmental restoration and waste management
- Conduct of operations
- Quality.

2.6 Status of Record of Decision Assumptions

There are no changes to the ROD assumptions relative to the SOW outside the tank farm fence. The scope of work inside the tank farm was amended by the NOV (Thompson 2003) to include covering only areas CPP-28, CPP-31, and CPP-79 with an infiltration barrier rather than covering the entire tank farm.

2.7 Design Assumptions

The overall bounding assumptions under which the TFIA will be performed are identified in the OU 3-13 RD/RA SOW. Design assumptions under which the individual components (i.e., lift station, surface water drainage system, storm water evaporation pond, and surface-sealing) of the TFIA will be performed are discussed in the following subsections. General assumptions for the TFIA include the following:

- Contaminated media, not previously identified by the OU 3-13 Comprehensive RI/FS, may be discovered during TFIA activities; if so, it will be managed in accordance with the soils management strategy in the Institutional Controls Plan (DOE-ID 2000b).

- Soils found to be contaminated will be managed per the Waste Management Plan (WMP) (DOE-ID 2003a) (Appendix L).
- The TFIA will be implemented with minimal impact from INTEC operations
- Impact to INTEC operations will be kept to a minimum.
- No excess soil will be generated during work activities performed inside the tank farm.
- TFIA surveillance and monitoring will conclude at the startup of OU 3-14 remediation activities.
- Construction activities inside the tank farm including minor grading, ditch construction, and asphalt installation will not impact the tank farm load limitations.
- Minor cuts and fills within the tank farm will be equivalent inside individual load zones per Document Control Drawing 097726 such that there are no increased loads in any zone.

2.7.1 Storm Water Drainage System

The bounding design assumptions under which the storm water drainage system upgrades will be performed, include the following:

- The watershed system is linear.
- All underground utilities have been identified on the drawings in Appendix F-2.
- The time of concentration to develop the subareas is the sum of the overland flow time and the initial lag time (i.e., the period to fully saturate the ground before run-off occurs) and is estimated to range from 8 to 15 minutes.
- The maximum rate of run-off will occur when run-off is being contributed to the outlet from the entire watershed.
- The rainfall intensity is uniformly distributed over the watershed.
- The design capacity for the individual drainage subareas is calculated for the downstream end of the areas and applied over the entire length of the drainage path.

2.7.2 Storm Water Evaporation Pond

The bounding design assumptions under which the storm water evaporation pond will be constructed, include the following:

- The watershed areas for collection of run-off storm water for the evaporation pond design include only those areas inside the inner INTEC security fence.
- The SCS curve number (CN) for impermeable surfaces = 98 (SCS 1986)
- The SCS CN for the previous area was based on natural desert landscaping for western desert urban areas with a Pancheri Soil = 70 (SCS 1986).

- All precipitation occurring during months with an average temperature less than or equal to 32°F was assumed to be snow; with a monthly average temperature greater than 32°F, the precipitation was assumed to be rain.

- The daily sublimation rate for accumulated snow was 0.5 mm/day (0.02 in./day) (Schmidt et al. 1998).

- Snowmelt run-off was assumed to occur on the last day of the month when the following month had an average temperature greater than 32°F.

- Snowmelt run-off was calculated using the SCS method by assuming that all accumulated snow would melt and run-off in one day (i.e., one event).

- Evaporation would not occur if the temperature was less than or equal to 32°F.

- If the pond did not have the capacity to accommodate the 25-year snowmelt event of 750,000 ft^3 prior to the annual snowmelt event, it would be drained.

2.7.3 Surface Sealing

The bounding design assumptions under which the selected unpaved surfaces will be sealed with asphalt, include the following:

- Minor grading will be conducted before placing the asphalt.

- Application of asphalt will divert a minimum of 80% of precipitation run-off from the selected tank farm areas CPP-28, CPP-31, and CPP-79.

- Application of asphalt will not affect the tank farm loading criteria.

- Repairs will be made to the asphalt following any activities in which the integrity of the sealed surfaces is compromised.

- Run-off storm water from the sealed surface will be uncontaminated.

2.8 Plans for Minimizing Environmental and Public Impacts

The action to seal the selected surfaces and collect the run-off from the tank farm area is designed to mitigate the impact of run-on precipitation and its negative effect upon the hrther infiltration of known contaminants to the SRPA. The Health and Safety Plan (HASP), included as Appendix M, provides for the implementation of appropriate health and safety measures to protect workers during the construction phase of the interim action.

2.9 Quality Assurance

The quality level designations included in Appendix G have been prepared for all TFIA activities. A Quality Level of 3 has been deemed appropriate for this project. All design, procurement, and construction activities will be in accordance with the Quality Level 3 designation.

The quality program for the Idaho Completion Project (formerly the Environmental Restoration Program) is described in Section 13 of *Implementing Project Management Plan* (IPMP) (INEEL 2000). Section 13 of the IPMP; the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2002a); and this WP govern the functional activities, organizations, and quality assurance/quality control (QA/QC) protocols that will be used for this project. Where applicable, the project specifications (Appendixes E-2 and E-3) shall specify the QA/QC procedures for a given task, consistent with guidance provided in the IPMP, Section 13, and the Quality Level 3 designation.

Where applicable, the project specifications (Appendixes E-2 and E-3) shall specify the QA/QC procedures for the given tasks and the Quality Level 3 designation.

2.10 Identification of Unresolved Data Needs

The C-40 Valve Box Project was completed and placed into service on May 23, 2001. This C-40 project modified the existing tank farm surface contours and may require changes to the grading plans contained within this plan yet these changes were minor and localized only in the area of the C-40 valve box at area CPP-79 (reference Controlled Drawing Number 509676).

3. REMEDIAL DESIGN

This section describes the remedial design for the OU 3-13 TFIA, which was developed in accordance with the engineering design basis presented in Section 2. The civil design specifications and drawings for the construction activities are included in Appendixes E-2, E-3, F-2, and F-3. The EDFs describing the design details for the storm water collection system, lift station, and evaporation pond are presented in Appendixes A, B, and C, respectively. An EDF presenting the discussion on the selection of using asphalt is included in Appendix D.

The physical site description and the remedial design for the storm water drainage system, evaporation pond, and surface sealing are described in the following subsections.

3.1 Physical Site Description

The TFIA activities will be conducted at the INTEC facility inside the tank farm and the 150-ft control zone around the tank farm (see Figures 1-2 and 1-3). Activities will also be conducted along the storm water collection system leading from the tank farm area to a new evaporation pond, to be constructed approximately 800 ft south of the existing sewage treatment plant and 200 ft north of Building CPP-698.

The tank farm area is approximately 5 acres with a gravel surface (see Figure 3-1). The majority of the tank farm is unpaved with numerous buildings and other protrusions.

In 1977, approximately 2 acres of the tank farm area were covered with an impermeable membrane liner followed by 2 in. of sand and 6 in. of gravel base course material. During the past 26 years, the tank farm area has undergone several upgrades. During these upgrades, the membrane liner was breached numerous times. Attempts were made to repair the liner but no adhesive would bond the old liner with new liner materials. The current condition of the liner is unknown because it is covered with gravel. The current thickness of the gravel covering the liner is also unknown due to traffic and various construction activities that have been conducted over the past 26 years. There are also holes in the liner around the perimeter of risers, pipes, and valve boxes.

The 150-ft control zone around the tank farm area consists of buildings, roads, sidewalks, ditches, and other graveled areas. The graveled areas are generally not compacted and consist of loose fill. The existing storm drainage system is in poor condition and does not carry the storm water run-off from the area efficiently. Storm water collects in the ditches and low spots within the 150-ft control zone and does not flow downstream to the outlet. The ditches are unlined and large amounts of sediment collect in culverts between ditches.

The tank farm is graded with an east-west crown in the middle so that, from the crown, the area slopes down to the north and south.

A concrete electrical duct bank blocks surface run-off flowing north from the crown in the tank farm. Run-off, flowing south from the crown, ponds to a low spot at the toe of the slope on Fir Street (access road to Building CPP-604). This area does not drain to the existing culvert downslope. A concrete swale runs along the north section of Beech Street west of the tank farm. The swale does not have proper drainage and storm water first ponds in this area, and then spills over the eastern edge of the swale into the gravel area along the fence line.

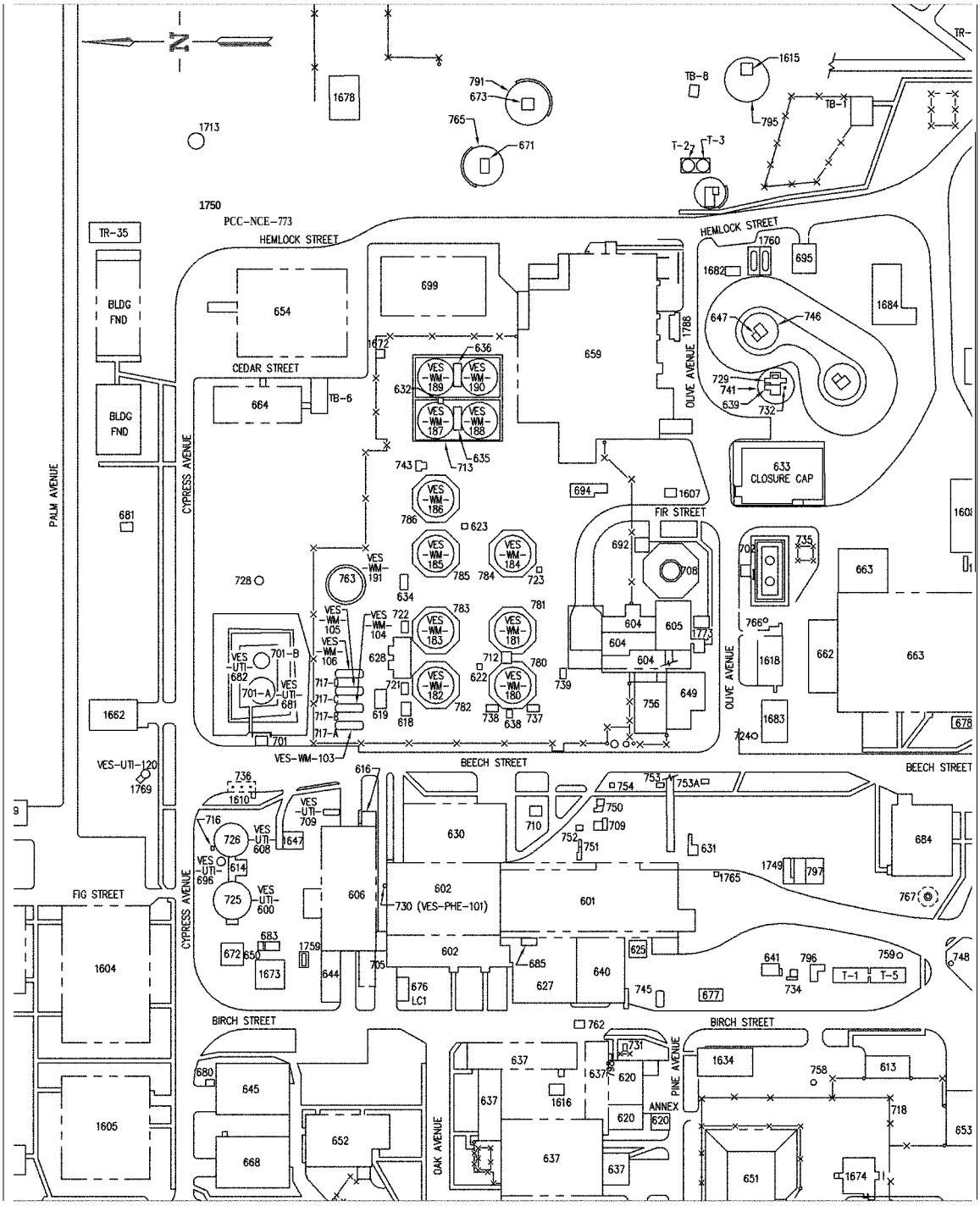

Figure 3-1. Tank farm area with street names and building numbers.

The earthen ditch north of the tank farm, on the south side of Cypress Avenue, also does not drain properly. The side slopes for the ditches are eroded and the inverts are filled with fine sand and debris. The culvert at the eastern end of this ditch, running under Cypress Avenue, is approximately 50% filled with debris and fine sand.

The eastern side of the tank farm, just west of the concrete sidewalk on the west side of CPP-699, is lower than the surrounding area.

There is no defined drainage system south of the tank farm. The finish floor elevations for Buildings CPP-649, CPP-659, and CPP-604 are lower than the surface of Olive Avenue. Storm water from the surrounding area flows to the low spots and seeps underground. There is a catch basin at the southwest corner of Building CPP-649, which is connected to an abandoned dry well on the south side of Olive Avenue by a 12-in.-diameter drain pipe.

All storm water run-off within the INTEC facility flows downslope except as discussed and is collected in a 58- x 36-in. culvert near the intersection of Palm Avenue and Lodge Pole Street in the northeast corner of the facility. This culvert runs under the security fences and discharges into ECA-37A, which is an unlined pit south of the sewage treatment plant.

3.2 Storm Water Collection System

The storm water collection system will be upgraded within and around the tank farm and out to the discharge point. This upgrade will include grading and constructing new ditches, regrading and lining the existing ditches with concrete, installing a trench drain along Beech Street, and replacing existing culverts with larger culverts to accommodate the expected resulting increase in storm water flow. It will also include constructing concrete headwalls and endwalls as necessary throughout the lined drainage system and constructing one lift station (discussed hrther below). An EDF for the design of the storm water drainage system to evaluate ditch and culvert capacities is included in Appendix A. Specifications and drawings for the upgrades to the storm water collection system are included in Appendixes E-2 and F-2, respectively.

The rational method (standard method for designing storm water drainage systems) was used for sizing the ditches and culverts to accommodate the peak discharge from a 25-year storm using the assumptions and design criteria discussed previously. The maximum rainfall intensity for the 25-year storm was determined using the time of concentration for the drainage area (i.e., the time it takes precipitation to flow from the farthest point in the watershed to the outlet). Thus, it represents the instantaneous peak for that area regardless of the duration of the storm event. As a result, sizing derived by the rational method will suffice for both the 25-year, 24-hour storm event and the 25-year, 6-hour storm event.

3.2.1 Lift Station

The lift station will be located in the low spot at the intersection of Olive Avenue and Beech Street to prevent flooding there. An EDF for the design of the lift station is included in Appendix B. Specifications and drawings for construction of the lift station are included in Appendixes E-1 and F-1, respectively.

The lift station will be 10 ft in diameter and 15.8 ft deep, to accommodate the storage and depth required for connecting to an existing storm drain line. The depth of the existing line is maintained because the effort required to reroute it through or around the utility tunnel running east to west down

Olive Avenue is prohibitive. The existing line flows into a dry well that will be partially filled with concrete to eliminate infiltration and will then act as a catch basin.

This dry well is currently used for steam condensate and surface water run-off disposal. The dry well is identified in the INTEC shallow injection well inventory as CPP-663 SI-SD-SB. The well has only one influent line and no effluent lines.

The storage volume of the lift station will be approximately 3,500 gal. Two 7.5-hp submersible pumps will be installed in the lift station. Each pump is sized to accommodate a flow of 603 gpm, the design flow from a 2-year storm event, which is expected to occur often. When both pumps are operating, they will be able to accommodate the design flow from a 25-year storm, approximately 1,230 gpm. The flow from the pumps will be directed through an 8-in.-diameter pipe approximately 400 ft long. The 8-in.-diameter force main is required to limit head loss within the pipe and keep velocities at acceptable levels. The force main will run east along Olive Avenue and discharge into the storm water collection ditch just west of Building CPP-659.

3.3 Evaporation Pond

A double-lined storm water evaporation pond with a leak detection system will be constructed outside of the INTEC fence, approximately 300 ft north of Building CPP-698, to collect storm water run-off that currently discharges into ECA 37A. An EDF for the design of the evaporation pond is included in Appendix C. Specifications and drawings for the evaporation pond are included in Appendixes E-1 to E-3 and F-1 to F-3.

Using the SCS method for calculating run-off from small watersheds described in SCS Technical Memorandum - 55 (SCS 1986) for the 25-year snowmelt event, approximately 750,000 ft^3 of run-off will discharge from the facility and be collected in the evaporation pond. This volume of run-off water was calculated for the entire INTEC watershed system. The pond is sized to evaporate this volume of water during 1 year based on a net evaporation rate of 34 in. per year. With 3:1 side slopes, the area at the bottom of the pond is approximately 75,000 ft^2.

The depth of the pond is 21 ft from the top of the berm, and the top of the berm is approximately 4 ft above the existing ground surface. The pond excavation volume is roughly 57,000 yd^3, excluding the 11,000 yd^3 of fill to be replaced for construction of the berm. Two 24-in.-diameter outlets with canal gates will be installed on the west side of the pond at elevation 4,908 ft. If the water in the pond rises to this elevation, there will still be approximately 2 ft of freeboard in the pond before the water reaches the tops of any of the ditches in the facility.

The pond will be compacted, then lined with a nonwoven geotextile fabric, followed by an impermeable 60-mil HDPE liner and HDPE drainage net (geonet) and another 60-mil HDPE liner. The liners will extend up to the top of the berm where they will be anchored into the ground. Ballast blocks will be set across the bottom and sides of the pond on a 50-ft grid to keep the liner in place.

The leak detection system will be constructed to contain and measure leakage that may penetrate the primary (top) liner. The bottom of the pond will be sloped to a collection sump. The nonwoven geotextile fabric and secondary (bottom) liner will be placed across the bottom of the sump and a 12-in.-diameter pipe will run down the slope of the berm and into the sump. The portion of the pipe in the sump will be perforated to collect water that may accumulate in the sump. The sump will then be filled with drain rock and covered with the drainage net and primary liner. A portable submersible pump will be installed in the pipe inside the sump. The pond and double-liner system are shown in Appendix F-1, Drawings C-19 through C-24. The pump will be controlled using high-level and low-level

switches attached to the pump and pump piping. The pump will turn on when the sump is full of water and turn off after it has been emptied. The water in the sump will be pumped to the top of the berm, where it will flow through a totalizer to measure the volume, and then back down into the pond.

The outer berm will be constructed at a 3:1 slope down to the existing surface elevation. Topsoil, stockpiled separately from the excavation material, will be placed on the outside of the berm and will decrease the slope to 4:1. All disturbed areas around the pond and on the outer berm will then be revegetated in accordance with the specifications. A security fence will also be constructed around the pond to keep unauthorized visitors and wildlife out of the area.

3.4 Surface Sealing

Unpaved/gravel surfaces within the tank farm areas CPP-28, CPP-31, and CPP-79 plus the 150-ft control zone surrounding the tank farm, will be sealed with asphalt (Figure 1-2). The remedial design for sealing all the unpaved surfaces includes grading, compacting, and paving.

Grading and compaction will ensure precipitation run-off will flow towards the storm water drainage system. The specifications and drawings for grading and installing the asphalt paving are included in Appendixes E-2, E-3, F-2, and F-3.

3.5 Subcontractor Staging

Subcontractor laydown and stockpile areas will be necessary both inside and outside the INTEC facility to stage equipment and materials close to the work. The staging areas will be located so that noncontaminated materials and equipment operating in work areas will be isolated from materials and equipment operating in contaminated areas.

4. REMEDIAL ACTION WORK PLAN

This section describes the management approach for conducting the interim action, the work elements of the interim action, the associated schedule, and the documentation required to perform the action and to document its completion.

4.1 Relevant Changes to the RD/RA SOW

The RD/RA SOW depicts the TFIA as two different phases of design and action. This document maintains the separation of the two different phases with Phase I to include work outside the tank farm fence and Phase II to include work inside the tank farm fence. The Phase II work scope has been reduced from covering the entire tank farm area with an infiltration barrier, to covering only areas CPP-28, CPP-31, and CPP-79.

4.2 Subcontracting Plan

The work elements comprising this interim action consist primarily of earthwork, including grading of in-place soils to promote surface drainage, excavation of new ditches and culverts, surface-sealing the selected areas inside the tank farm and adjacent areas, and all earthwork necessary to construct the evaporation pond. Other work includes lift station construction, fence installation, and concrete work.

All of this work is planned to be separated into Phase I and Phase II and competitively bid and awarded as a firm, fixed price subcontract. BBWI's procurement process will be followed and will include, but is not limited to, issuance of a Request for Proposal (RFP), prebid conference, bid evaluation, notice of award, notice to proceed, vendor data submittals, and a preconstruction kickoff meeting. The work elements described in this WP will be performed under separate subcontracts for Phase I and Phase II. Each subcontract may be hrther divided into several subcontracts. The liner system installation will be a subtier contract to the primary subcontract. Site force account personnel may perform a portion of this work, if necessary. Both subcontract and site personnel will be required to perform to the schedule outlined in Appendix H in order to meet the overall project schedule and objectives.

4.3 Remedial Action Work Elements

The following sections identify the work elements required to implement and complete the Tank Farm Interim Action. Additional detail can be found in the project design drawings, technical specifications and the RFP, when it becomes available.

4.3.1 Premobilization

Requirements for vendor data submittals, training, and medical information specified by the design specifications and INEEL-specific requirements will be provided in the RFP. The subcontractor will provide all required documentation, bonds, and insurance, and proof that all required training and medical examinations are complete as per the project-specific HASP (Appendix M) before the subcontractor will be allowed to mobilize. These submittals will certify that the subcontractor can meet and satisfy the requirements of the RFP and the project.

4.3.2 Mobilization

Mobilization is the work performed by the subcontractor in preparation for construction activities. This work generally implements the project- and site-required administrative, engineering, and health

and safety controls. Mobilization will include such activities as setting up subcontractor site offices; demarcating of parking areas, equipment and material laydown areas, and work zones; and installing signs, postings, and fences. Since some of the interim action activities will be performed inside the INTEC facility fence (e.g., tank farm surface grading) and some outside the facility fence (e.g., construction of the evaporation pond), separate laydown areas, work zones and postings will likely be required. Coordination of these activities, particularly those occurring within the INTEC facility fence, will be required between contractor, subcontractor and facility personnel to ensure that these activities have minimal impact on facility operations and maintenance.

4.3.3 Storm Water Drainage System

This work activity involves the upgrade of selected ditches and replacement of culverts around the tank farm, and all activities associated with this work. The specific work elements, listed below, will be performed in accordance with the specifications contained in Appendixes E-1 through E-3:

- All existing storm water collection ditches around the tank farm and out to the specified discharge point will be graded and lined with concrete.
- Selected existing culverts around the tank farm and out to the specified discharge point will be replaced with larger culverts to accommodate the expected increase in storm water flow, resulting from improved storm water collection.
- Concrete headwalls and endwalls will be constructed, as necessary, throughout the lined drainage system.
- Two concrete-lined ditches will be constructed within the tank farm to collect and direct precipitation run-off to the surrounding storm water collection system.
- A lift station will be constructed at the intersection of Beech Street and Olive Avenue to pump storm water to a location where it will drain freely to the specified discharge point.
- Three manholes will be installed.
- A trench drain will be installed.

4.3.4 Storm Water Evaporation Pond

A lined storm water evaporation pond will be constructed to collect storm water run-off from the tank farm and other INTEC areas that currently drain into ECA 37A (see Figure 1-2). The pond will be located east of the INTEC perimeter fence and south of ECA 37A and the existing sewage treatment plant. Approximately 21 ft deep, with bottom dimensions approximately 240 ft x 320 ft, the pond will be double-lined with a leak detection system and be constructed in accordance with the specifications and drawings found in Appendixes E-1, E-2, F-1, and F-2. All storm water drainage ditches and culverts within the scope of this project will be routed to this pond, and a new chainlink fence will be constructed around it as a wildlife and personnel safety precaution.

Approximately 57,000 yd^3 of soil will be excavated during this project. Excess soil that is not needed for construction of the pond or is not suitable for backfill will be screened for radiological contamination and managed per the project WMP (Appendix L). Clean soil will be stockpiled for future use inside the area of contamination.

4.3.5 Surface Sealing

An asphalt covering will be applied to areas CPP-28, CPP-31, and CPP-79 within the tank farm fence and to the majority of the unpaved surfaces within the 150-ft control zone to minimize infiltration into the underlying soils. The areas to be sealed are shown in Figure 1-2 and Sheet C-1, Appendix F-3.

4.3.6 Storm Water Management and Sediment Control

The subcontractor shall be required to read, sign, accept, and comply with the Storm Water Pollution Prevention Plan developed for this project. The Storm Water Pollution Prevention Plan, found in Appendix I of this plan, outlines the measures the subcontractor must follow to comply with INEEL rules and regulations regarding control of storm water and associated sediment.

4.3.7 Clearing and Grubbing the Sites

The subcontractor shall clear the work sites of vegetation and/or debris as required, in accordance with the project specifications (Appendixes E-2 and E-3). The subcontractor shall confine clearing and grubbing activities to those areas required for barrier construction, roadwork, and evaporation pond construction. Disturbance of underlying soils shall be minimized during performance of these activities, and any areas outside the designated areas that are damaged or disturbed by the subcontractor's activities shall be repaired and reseeded, if necessary, by the subcontractor, in accordance with the appropriate specifications (Appendixes E-2 and E-3).

4.3.8 Dust Control

Precautions such as water spray, wind monitoring, and/or visual observation will be used during any earthmoving activities to prevent the generation of fugitive dust. Air monitoring may be performed at the discretion of the radiological control technician (RCT) or the industrial hygienist based on their evaluation of the effectiveness of the dust suppression measures to control the spread of contamination through fugitive dust. Personal protective equipment, when required, shall be used as specified in the project-specific HASP (Appendix M) and as determined by the RCT or industrial hygienist present at the job site.

4.3.9 Site Reclamation

Upon completion of all interim action activities, reclamation of the work sites shall be performed, including areas adjacent to any barriers disturbed during construction, laydown areas, and all areas affected by road work and borrow and stockpiling activities. Seeding and mulching shall be performed in accordance with the requirements identified in the revegetation specifications found in Appendixes E-2 and E-3.

4.3.10 Operations and Maintenance

The drainage upgrades and the surface-sealing measures are designed as passive operations using gravity and the region's climate to control the collection and evaporation of run-off precipitation from the interim action areas. The only exception is a single lift station composed of two pumps to transfer water from a low point to the nearest drainage ditch. Maintenance activities are directed to the upkeep of the lined ditches, patching of the pond liner, maintenance of the lift station components, and repairs of the surface sealant as required. For specific details, refer to the Operations and Maintenance (O&M) Plan in Appendix K.

4.3.11 Demobilization

Following completion of all interim action activities and decontamination of equipment, the subcontractor will demobilize from the site. The subcontractor will remove the office trailer and ancillary equipment from the site. Temporary fencing and signage, and a decontamination pad, if used, will be removed and disposed of appropriately.

4.4 Performance Measurement Points

The following two sections describe the evaluation against remedial action performance points.

4.4.1 Evaluating Infiltration Reduction in the Tank Farm

Comparing future volumes of water pumped from the tank vaults with the historical amounts is one possible means of measuring infiltration reduction in the tank farm. This would assume that water being collected in the vaults is a short-term result of normal precipitation events.

Associating future amounts with historical amounts of collected water in the evaporation pond is another possible measure of effectiveness, provided an accurate model could be developed and appropriately tested during actual rainfall events. This would assume the pond and the sealant applications are functioning effectively.

4.4.2 Monitoring Evaporation Pond Performance

The evaporation pond will be a double-lined impoundment with a leak detection system. The system is constructed so that any water that may leak through the primary liner (top liner) will flow through the drainage layer between the two liners to a sump where it will be collected. The water collected in the sump will be pumped out and over the top of the pond berm and back into the pond. A totalizer will be placed in the piping to measure the volume of water pumped out of the sump. This volume will be monitored as described in the O&M Plan in Appendix K to evaluate the effectiveness of the pond liner system. If the leakage rate is greater than the maximum allowable rate of 1/8 in. per acre/day (3,400 gal/acre/day), the leak or leaks will be located and the liner will be repaired.

4.5 Field Oversight/Construction Management

The NE-ID remediation project manager will be responsible for notifying the EPA and IDEQ of major project activities (e.g., project startup or closeout) and other project activities, as it deems appropriate. NE-ID will serve as the single interface point for all routine contact between the Agencies and BBWI—the RD/RA contractor.

BBWI is responsible for field oversight and construction management services for this project, and will provide field support for health and safety, quality assurance, and landlord services. A project organization chart and associated position descriptions are provided in the project-specific HASP (Appendix M).

Visitors to the project site who wish to observe the interim action construction must meet badging and training requirements necessary to enter INEEL facilities. Project-specific training requirements for visitors are described in the project-specific HASP (Appendix M).

4.6 Project Cost Estimate

As detailed in the Interim RA Report (DOE-ID 2002b), the accrued project costs for the remedial activities completed under the original RD/RA WP (Rev. 0) totaled $3.5M, with subcontract costs accounting for $2.4M. The original detailed cost estimate is provided in Appendix J-1. The remainder of the remedial work is divided into two distinct phases of the project. Phase I consists of work outside the tank farm fence and Phase II consists of work inside the fence. Project cost estimates for Phase I and II are provided in the following sections.

4.6.1 Phase I Cost Estimate

The remaining activities to be completed outside the tank farm fence primarily include lining the evaporation pond, installing culverts, and regrading and lining drainage ditches. The estimated cost to complete this work is $982,000. The detailed cost estimate is provided in Appendix J-2.

4.6.2 Phase II Cost Estimate

The remaining activities to be completed inside the tank farm fence consist of preparing for and installing an asphalt cover over release Sites CPP-28, CPP-31, and CPP-79 to route surface water flow to the Phase I drainage system. The preliminary cost estimate to complete this work is $529,000. The detailed cost estimate is provided in Appendix J-3.

4.7 Project Schedule

The original RA schedule for the TFIA is presented in Appendix H-1 and includes all project tasks from preparation of this work plan through performance of the interim action to submittal of the final RA Report. Portions the work contained in this original schedule were not completed. The remainder of the remedial activities to complete the TFIA project have been divided into Phases I and II, which will be scheduled as separate projects. The project schedules for Phases I and II are provided in the following sections. Table 4-1 contains the deliverables and enforceable milestone dates (Bowhan 2003).

Table 4-1. Enforceable project milestones

Document	Enforceable Milestone Date
Certification Letter to IDEQ and EPA for completion of Phase I work	12/31/03
Certification Letter to IDEQ and EPA for completion of Phase II work	9/30/04
Draft Tank Farm Interim Action Operations and Maintenance Plan	5/31/05
Draft Remedial Action Report	5/31/05

Administrative and document preparation activities are based on an 8-hour day, 5-day work week, while field activities are based on a 10-hour day, 4-day work week. The schedules assume concurrent contractor and NE-ID document reviews. There is no schedule contingency for delays due to late or slow document reviews, or for field activities impacted by adverse weather conditions.

4.7.1 Phase I and II Schedule

The Phase I and II schedules contain all project tasks from the design, bid, and build though the certification letter of completion. The project start date was March 24,2003. The certification letter was

transmitted September 24, 2003. The projected end date for the Phase II portion is September 30, 2004 Further details about the project schedules are provided in Appendix H-2.

4.8 Inspections

The following sections describe the inspections planned for the TFIA and associated documents. In addition to these inspections, the Agency project managers or their designees may, at their discretion, inspect the site during the construction phase of the interim action to assess compliance with the remedial design and the requirements outlined in this WP. These inspections may be conducted at any time during the interim action.

4.8.1 Prefinal Inspection

A prefinal inspection of Phase I and Phase 2 installations will be conducted by the Agency project managers at, or prior to, completion of the TFIA Phase II activities. The contractor will develop a prefinal inspection checklist for the Agencies to use in conducting the inspection. The checklist, which will focus on RA elements significant to meeting the ROD requirements, will identify specific activities, procedures, or other items agreed upon by all parties to be inspected that will constitute acceptance of the interim action activities. NE-ID will notify the Agencies approximately 2 weeks prior to the prefinal inspection date.

4.8.2 Prefinal Inspection Report

Following the inspection, the Prefinal Inspection Report will be prepared and submitted to the Agencies as a secondary document. Although NE-ID will respond to comments received from EPA and IDEQ, the Prefinal Inspection Report will not be revised. Instead, the comments will be resolved in the context of the Remedial Action Report, a primary document, in accordance with Section 8.4 of the FFA/CO (DOE-ID 1991). The Prefinal Inspection Report will include the following:

- Names of the inspection participants
- Completed inspection checklist identifying deficiencies and/or outstanding interim action requirements
- Discussion of findings
- Corrective action required to resolve deficiencies
- Schedule for completion of corrective actions
- Date of final inspection
- Operation and Maintenance Plan update

All of the deficiencies and outstanding items, along with the actions required to resolve them, will be identified and approved by the Agencies during the prefinal inspection. The Prefinal Inspection Report will then document any unresolved items and the action(s) required to resolve them.

4.8.3 Final Inspection

The final inspection will be conducted following demobilization, when all excess materials and nonessential remediation equipment have been removed from the site. Some equipment may remain onsite to repair items observed during the final inspection. The final inspection, conducted by the Agency project managers, will confirm the resolution of all outstanding items identified in the prefinal inspection and verify that the TFIA has been completed in accordance with the requirements of the ROD (DOE-ID 1999) and as amended by the NOV (Bowhan 2003).

4.9 Remedial Action Report

The Remedial Action Report for the TFIA will be prepared following demobilization and final inspection, and submitted to the Agencies as a primary document. This report will include the following:

- A synopsis of the interim action work defined in the RD/RA WP and certification that this work was performed
- Explanation of any modifications to the RD/RA WP, including the purpose for and the results of the modification
- Discussion of issues encountered during remediation and their resolution
- Brief description of outstanding items from the prefinal inspection, as documented in the Prefinal Inspection Report
- A statement, provided by NE-ID, certifying that the remedy is achieving, or has achieved, the requirements of the ROD
- Discussion of the results of the final inspection
- Updated O&M Plan
- As-built drawings showing final contours and configurations
- Final total costs of the RA.

4.10 Decontamination

When the interim action is complete, equipment used for excavation and soil spreading will be decontaminated at designated decontamination areas in each work zone. All rags, brushes, and spent decontamination solutions will be managed per the project WMP (Appendix L).

4.11 Operation and Maintenance

The project O&M Plan (Appendix K) identifies inspection and maintenance requirements to be implemented following completion of the TFIA. The plan also identifies the requirements for periodic reporting and identification of endpoints for O&M. Maintenance activities are anticipated to continue until the final OU 3-14 RD/RA WP is complete, at which time OU 3-14 remediation activities will begin. This O&M Plan is a draft and will be revised and updated as pertinent information is received from the equipment manufacturers. Upon receipt of manufacturers' suggested O&M information, repair manuals, etc., this plan will be finalized and submitted with the RA Report. This O&M Plan will also be updated to incorporate the necessary changes to the infiltration barrier and schedule as defined by the Agreement to Resolve Dispute (see Appendix N). The update will include information known at that point in time, such as the status of OU 3-14 RI/FS and ROD and an early permanent remedy.

4.12 Waste Management

The following waste streams are expected to be generated as a result of the TFIA remediation activities:

- Personal protective equipment
- Decontamination materials
- Noncontaminated project waste
- Soil
- Debris.

Ultimate disposition of these waste streams will depend on whether they are radionuclide-contaminated. A description of the anticipated project wastes and their appropriate disposition are provided in the project WMP (Appendix L).

4.13 Health and Safety

A project-specific HASP (Appendix M) was prepared specifically for the tasks and conditions expected during implementation of this project. The HASP, which may be updated as site and project conditions dictate, includes the following elements:

- Task site(s) responsibilities
- Personnel training requirements
- Occupational medical program and medical surveillance
- Safe work practices
- Site control and security
- Hazard evaluation
- Personal protective equipment

- Decontamination and radiological control
- Emergency response plan for the task site(s).

4.14 Spill Prevention/Response Program

All hazardous materials will be stored and handled in a safe manner to prevent spillage. Preventative spill containment will be required and implemented per the manufacturers' recommendations. Any inadvertent spill or release of potentially hazardous materials (i.e., equipment fluids) will be subject to the substantive requirements contained in applicable emergency-contingency plans and the INEEL Emergency-Addendum 2, Idaho Chemical Processing Plant.

Handling of the material and/or substance shall be in accordance with the recommendations of the applicable material safety data sheets, which will be located at the project site(s). In the event of a spill, the Emergency Response Plan outlined in the project HASP (Appendix M) will be activated. All materials/substances at the work site shall be stored in accordance with applicable regulations and stored in approved containers.

5. REFERENCES

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Appendix A

Engineering Design File
Drainage Ditch Capacity Verification at INTEC
(EDF-I387)

[The document that is the subject of this appendix was provided in the original deliverable.]

TO VIEW APPENDIX A SEE:

EDF-1387, REV.00

Appendix B

Engineering Design File
Olive Avenue Storm Water Lift Station at INTEC
(EDF-1379)

[The document that is the subject of this appendix was provided in the original deliverable.]

TO VIEW **APPENDIX B SEE:**

EDF-1379, REV.00

Appendix C

OU 3-13 Group I , Tank Farm Interim Action, Evaporation Pond Sizing Design Engineering Design File EDF-ER-206 (INEEL/EXT-2000-00920)

[The document that is the subject of this appendix was provided in the original deliverable.]

TO VIEW APPENDIX C SEE:

EDF-ER-206, REV.00

Appendix D

Engineering Design File – OU 3-13, Group I , Tank Farm Interim Action, Soil Cover Justification (EDF-3824)

Document ID: EDF-3824
Revision ID: 0
Effective Date: 09/22/03

Engineering Design File

PROJECT NO. 020978

OU 3-13, Group 1, Tank Farm Interim Action, Soil Cover Justification

Prepared for:
U.S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho

Idaho National Engineering and Environmental Laboratory

Form 412.14
04/03/2003
Rev. 04

ENGINEERING DESIGN FILE

DNR 9/22/03

EDFNo.: 3824 EDF Rev. No.: 0 Project File No.: SP-5

. Title: OU 3-13, Group 1, Tank Farm Interim Action, Soil Cover Justification

!. Index Codes:
Building/Type _____ SSC ID _____ Site Area 200

:. NPH Performance Category: _____ or ☐ N/A

·. EDF Safety Category: _____ or ☒ N/A SCC Safety Category: _____ or ☒ N/A

i. Summary:

The purpose of this Engineering Design File is to provide justification for the soil cover selected in the Operable Unit 3-13 Tank Farm Interim Action, Group 1, Remedial Design/Remedial Action Work Plan. Asphalt was chosen as the surface cover and replaces a spray-on polyurea product. This represents a change from the original decision that was documented by EDF-ER-115. Asphalt was selected principally on the basis that it will meet the intent of the interim action (i.e., reduce water infiltration by 80%). it is a well-known material, it is readily available, it can be worked using conventional equipment and work practices, it is cost effective, and its use will maintain consistency with materials at the tank farm and INTEC.

:. Review (R) and Approval (A) and Acceptance (Ac) Signatures:
(See instructions for definitions of terms and significance of signatures.)

	R/A	Typed Name/Organization	Signature	Date
'erformer/ \uthor	N/A	Dean Shanklin	Dean E. Shanklin	9-22-03
'echnical Checker	R	Kurt D. Fritz	Kurt D. Fritz	9/22/03
ndependent 'eer Reviewer if applicable)	R	Jestin Hurst	Jestin Hurst	9/18/03
\pprover	A	Howard S. Forsythe	Howard S. Forsythe	9/22/03
Requestor if applicable)	Ac			
)oc. Control		Donna Rish	Donna M. Rish	9/22/03

'. Distribution: (Name and Mail Stop)

1 Does document contain sensitive unclassified information? ☐ Yes ☒ No
If Yes, what category:

). Can document be externally distributed? ☐ Yes ☐ No

0. Uniform File Code: 6102 Disposition Authority: ENV1-h1
Record Retention Period: Cutoff at submission of final financial status report for the site, or after resolution of all issues, whichever is later. Destroy 10 years after cutoff with written approval from EPA award official.

1. For QA Records Classification Only: ☐ Lifetime ☐ Nonpermanent ☐ Permanent
Item and activity to which the QA Record apply:

EDF No.: 3824 EDF Rev. No.: 0 Project File No.: SP-5

1. Title: OU 3-13, Group 1, Tank Farm Interim Action, Soil Cover Justification

2. Index Codes:
Building/Type _____ SSC ID _____ Site Area 200

12. NRC related? ☐ Yes ☒ No

13. Registered Professional Engineer's Stamp (if required)

1. INTRODUCTION

The Record of Decision (ROD) for Operable Unit (OU) 3-13, Group 1, Tank Farm Soils (DOE-ID 1999), established an interim action for contaminated soil surrounding underground tanks (tank farm soils) at the Idaho Nuclear Technology and Engineering Center (INTEC). Previous operations within the tank farm have resulted in known areas of soil contamination. The major threats associated with these soils are the potential for direct exposure to workers or the public, and leaching and transport to the Snake River Plain Aquifer. The OU 3-13 Tank Farm Interim Action (TFIA) is designed to mitigate these risks until a final remedy is developed and implemented. The selected interim action is institutional controls with surface water control.

The interim action was initiated in 2000 per the Remedial Design/Remedial Action (RD/RA) Work Plan for Group 1 TFIA (DOE-ID 2000). The RD/RA was initially approved and finalized in 2000. It defined the design and implementation schedule for the tank farm soils interim action. The major design components of the RD/RA Work Plan submitted in 2000 were (1) upgrading the stormwater drainage system, (2) building a stormwater evaporation pond, and (3) sealing soils within the tank farm and a 150 ft controlled zone around the tank farm. The RD/RA Work Plan has been revised (DOE-ID 2003) and is now divided into two distinct phases. Phase I consists of upgrading the stormwater drainage system, paving gravel areas outside the tank farm, and building the evaporation pond and Phase II consists of covering select contaminated soil sites within the tank farm. The selected surface sealant for the tank farm described in the RD/RA Work Plan submitted in 2000 was a spray-on polyurea coating.

Field execution of the interim action began in 2000 and was stopped in 2001 prior to completion of work. The Environmental Protection Agency (EPA) issued a Notice of Violation (DOE-ID 2003) to the Department of Energy (DOE) for failure to meet the schedule for completion defined in the RD/RA Work Plan. In an Agreement to Resolve Dispute, dated March 4, 2003, EPA and DOE agreed to complete the work begun outside the tank farm fence and to install infiltration barriers (i.e., a surface cover) over the affected areas of release sites CPP-28, CPP-31, and CPP-79 within the tank farm (Bowhan 2003). Installation of the infiltration barrier over the selected sites inside the tank farm is to be performed after the RD/RA Work Plan is revised to incorporate the changes to the interim action as mutually agreed by the EPA and DOE.

This Engineering Design File (EDF) was written to support the revised remedial design for the TFIA and provide justification for switching to an asphalt soil cover from the original polyurea spray-on coating. The remainder of this EDF describes the surface cover options and the basis for switching to asphalt from the polyurea spray-on coating.

2. SURFACE COVER OPTIONS

EDF-ER-115, OU 3-13 Tank Farm Interim Action Group 1 Soils Decision Analysis Study, identifies and describes five surface cover options evaluated for covering Tank Farm Soils. Each option was evaluated against several criteria. The five options are as follows:

1. Concrete
2. InstaCoat© (i.e., spray-on polyurea coating)
3. Buildings
4. RoadOyl©/asphalt

5. Traffic/no-traffic hybrid combination (i.e., RoadOyl© applied to the traffic bearing surfaces and InstaCoat© applied to the remaining areas).

Since RoadOyl© and asphalt are similar with respect to the evaluated criteria, these two options were combined as one surface treatment option.

Results of the original evaluation indicated that the spray-on polyurea coating was the most favorable option. For further details about the criteria for evaluating all the options, see EDF-ER-115. A hybrid of the polyurea coating, and asphalt or RoadOyl© rated second highest in the evaluation process.

Following selection of the polyurea as the infiltration barrier for the tank farm, a demonstration of three types of polyurea material was performed in April 2000. Initial results indicated a satisfactory performance of the material. However, numerous issues arose following the demonstration of the polyurea coating, including:

1. Two years following the demonstration have shown that the polyurea will degrade and shrink significantly.

2. A large majority of the tank farm surface is not compactable. Application of polyurea over an noncompactable surface would cause significant long-term wear and durability problems

3. Installation of the polyurea around the existing structures is more difficult than anticipated.

4. Significant safety issues arose regarding the slick surface of the polyurea during inclement weather and ponding of water over an uneven subgrade.

5. Procurement of a polyurea spraying system and training plant personnel with all the associated procedures etc. to perform repair work would cost more than anticipated.

6. The local subcontractor who was to provide the service for application of the polyurea is no longer in business.

7. Application of the polyurea cannot be performed without significant engineering controls during windy conditions.

Based on these issues, it was determined that the application of polyurea over the tank farm would not be the best choice.

3. SELECTED SURFACE COVER

Due to the issues associated with the polyurea coating, asphalt was selected as the option for covering the tank farm soils. The switch to asphalt is justified on the basis of the following:

- The typical permeability of asphalt is 10^{-3} cm/sec. When asphalt is applied with a seal coat and sloped to drainage collection and discharge points there will be no ponding of the water on the paved surface. Therefore, the asphalt cover over the contaminated soil sites can be considered impermeable, easily meeting the requirement of the ROD to minimize stormwater infiltration by 80%.

- Installation uses conventional equipment and work practices (i.e., no specialized equipment or materials are necessary)
- It can be easily bonded to tank farm structures using the specified tack coat to minimize infiltration.
- It is readily available and a well-known material with a known track record
- it will maintain consistency with other materials used in the TFIA (e.g., asphalt has been used previously and is anticipated to be used for dressing around ditches)
- It is less susceptible to causing ponding than other materials such as spray-on coatings
- It is more economically feasible than other materials such as concrete
- It will result in less waste created during the final remedial action than other materials (i.e., concrete will result in at least twice as much waste)
- it is a proven, safe surface upon which to walk, work, operate equipment. and travel
- Small cracks and potholes can be easily repaired year round.
- Significant repairs can be performed easily under annual asphalt maintenance contracts at the INEEL.
- The cover design is less complicated than for other materials (i.e., concrete) since it does not require reinforcement or joints to resist thermal effects.

Each year the INEEL carries out a road maintenance campaign. This work often includes patching and paving existing roadways and areas. Scheduling the installation of asphalt over the release sites concurrently or sequentially with this road maintenance campaign could minimize asphalt costs, adding to the economically attractiveness of asphalt.

4. REFERENCES

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